

Spiroglyphus and *Stoa*, Taxonomic Problems in the Vermetidae

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(1 Text figure)

IN 1961, WHEN I WAS PROPOSING a reclassification of the family Vermetidae, I could not come to a clear resolution of the problems with two generic names. Reviewing those problems now, I am reminded of the words of a Dutch zoologist, M. M. SCHEPMAN (1908: 183), who said caustically of the vermetids that they are "the most disagreeable among gastropods to deal with. The extreme variability ... and the often vague descriptions render ... impossible ... safe identifications." This applies, indeed, to *Spiroglyphus* Daudin, 1800, and *Stoa* De Serres, 1855. I advised, in 1961, setting *Spiroglyphus* aside as a *genus dubium*, although it was a taxon long considered molluscan, for I found there was a possibility the original material might have been annelid instead. I felt the name should be revived only if authentic type material could be brought to light or a plausible neotype specimen selected. The second name, *Stoa*, I dismissed as not applying to the Mollusca, on the advice of the paleontologist Dr. B. F. Howell, who was revising the fossil Annelida for the "Treatise on Invertebrate Paleontology." He thought that *Stoa* was undoubtedly a tubicolous annelid. However, when that volume of the "Treatise" was published, Howell did not list the name *Stoa* because he found no fossil records of it. More recently, in a systematic reference work on polychaete annelid genera, FAUCHALD (1977: 152) cited *Stoa* under the serpulid family Spirorbidae, but only as a genus that is "invalid" and "indeterminable." The problem of *Spiroglyphus* remains today as enigmatic as ever, and *Stoa* floats ghost-like, unclaimed in either Mollusca or Annelida.

This paper is an attempt to review the problems for both of these taxa and to assess the consequences of alternative courses of action.

The generic name *Spiroglyphus* Daudin, 1800, comprised two species, *S. politus* and *S. annulatus*. Only the latter was figured (see Figure 1). Both were said to have tubular shells, irregularly coiled, entrenched on the surface of other shells, *S. politus* on pectens and pinnae in

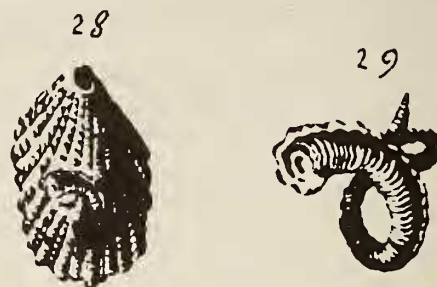


Figure 1

Figures 28 and 29 from DAUDIN, 1800, "Recueil de mémoires et de notes sur des espèces inédites ..."

Figs. 28-29. *Spiroglyphus annulatus*

28. Grandeur naturelle, sur une fissurelle

29. Grossi, et détaché.

the Indian Ocean area and *S. annulatus* on patellas and fissurellas, also of the Indian Ocean. The figure shows a specimen attached to what appears to be a strongly ribbed keyhole limpet. The entrenched shell is well portrayed, showing the lamellar growth increments that are characteristic of many vermetids. However, the initial whorls are shown as straight, a characteristic of tube worms, whereas vermetid gastropods have helical coiling in the initial whorls. The shell to which Daudin's specimen was attached is rather sketchily drawn. He had not seen the soft parts of either of the two species, and his discussion shows that he was only dimly aware of how tube worms and mollusks might differ.

The name *Stoa* was proposed for a new genus of tubicolous annelids by De Serres in 1855. He had three species, all illustrated, but he had only the shells for the first two, *S. ammonitiformis* and *S. spirulaeformis*. For the

third one, *S. perforans*, he figured also an operculum. He characterized the genus as having an irregularly coiled shell, the last whorl often detached from the first and even prolonged into a straight tube; the aperture oval, ending in a solid, calcareous, conic operculum formed of three small circular bands, concave externally, diameter 2 to 3 mm. The illustration of this operculum shows it as having a steeply conic profile, with a notch on the outer edge, unlike that of any known species of vermetid. De Serres' statement, made twice, that the operculum is calcareous led Dr. Howell and later authors to infer that *Stoa* was indeed an annelid. TRYON (1886) reprinted De Serres' figures (plt. 51, figs. 48-49; plt. 52, fig. 54; plt. 54, figs. 84-86).

Gray in 1840, in a synopsis of the contents of the British Museum, picked up Daudin's *Spiroglyphus* for use in Mollusca, family Vermetidae, alongside *Vermetus*, which Daudin had also described and had correctly considered as gastropod. The first malacologist to make extensive studies of the family was O. A. L. Mörch, who published a series of papers in the years 1859 through 1862. Although in general Mörch was a careful observer, his discussions were sometimes ambiguous. He recognized *Spiroglyphus* as a genus, coordinate with a genus *Siphonium*, which he dated from Gray, 1850, and he made *Stoa* a synonym of both. The fortunes of *Siphonium*, a name that was invalid because preoccupied by *Siphonium* Link, 1807, need not be pursued here. In synonymizing *Stoa* under *Siphonium*, Mörch commented: "M. de Serres has established a genus of 'Annelides sédentaires tubicolés,' under the name *Stoa*, chiefly on account of their habit of burrowing a bed in the surface of other shells, exactly corresponding to the genus *Spiroglyphus* of Daudin. Both authors have mixed together species of two very different genera, the one with a concave, the other with a thick, convex operculum; but as Daudin has selected for illustration of his genus a species with an operculum of the latter kind, I regard the represented species as the type ..." (MÖRCH, 1861: 152). On *Stoa* he said (*ibid.*, p. 153): "A conical operculum, which is solid and calcareous, seems ... unnatural and without analogy among the Mollusca and Annelida ... The last whorl of the operculum terminates abruptly at the edge ... which I have never seen so strongly expressed, neither have I seen an operculum of the high conical shape figured. ..." Apparently, though, he did accept *Stoa* as molluscan rather than annelid.

Despite having synonymized *Stoa*, Mörch used the name subgenerically under *Siphonium* for 6 species. Nowhere did he categorize the difference between *Siphonium*, s. s., and *Stoa* nor cite a type species for either (in fact, the selection of *S. annulatus* as type of *Spiroglyphus* was one

of the few times in all his published work that he used the word "type"). His basis for including species under *Stoa* is not clear; he reported the operculum as unknown in two, nearly flat in one, and concavely conic in three. The first species he listed was *Siphonium (Stoa) politum* (Daudin), under which he synonymized, because of similar wording of the descriptions, *Stoa perforans* De Serres. It is this latter that has the steeply conic operculum.

In a discussion of the genus *Spiroglyphus*, MÖRCH (1862a: 326) again cited *Stoa* as a synonym and said, "The shell ... is so similar to that of *Stoa* that it can only be distinguished by the operculum, which is convex outside, flat inside, with a central cylindrical wart. ... The colour varies ... from bright purple to nearly black, and the surface from nearly flat to very convex."

The next malacologist to deal with these names was TRYON (1886: 163-ff.). As Tryon was a lumpner, he demoted many of Mörch's units to lower rank but followed his arrangement in the main. He, too, synonymized *Stoa* with *Siphonium* ("in part") and *Spiroglyphus* ("in part"). Mörch's subgenus *Dendropoma* he ignored as a "section." The name *Stoa* then virtually disappeared from the literature until 1939, when J. R. leB. Tomlin used it subgenerically for a South African vermetid, *Vermetus (Stoa) corallinaceus* (reallocated by later authors to *Dendropoma*). Tomlin did not diagnose or cite a type species for the subgenus. *Spiroglyphus*, however, continued in use in Mollusca – although confused with annelids by certain Californian paleontologists – until 1960.

This, then, is the historical background for my recommendations in 1961. No one since has put in a brief for resuscitating *Stoa*, but at least two authors (MORRISON, 1968; ABBOTT, 1974: 99 - 101) have risen to the defense of *Spiroglyphus* on the basis of priority. I would like here to point out the various alternatives and consequences.

First and most obvious step is search for original type material. When I inquired of Dr. Édouard Fischer-Piette of the Paris Museum, who had been successful in recovering Adanson's lost collection, whether the Daudin specimens might be at Paris, he replied that not only were they not in the Paris Museum but that he had no idea of how to start a search. Obviously, an outsider would stand little chance of making this discovery. De Serres' specimens were stated to be in the collections of the Université de Montpellier. Through a French colleague, M. Jacques Laborel, I was put in touch recently with the curator there, Mlle. F. Cassagne-Mejean, who promised not only to search for the material but to send photographs if it were found. Nothing, however, was forthcoming, and we must conclude that this material is lost.

The problem of *Spiroglyphus* is more complex than appears on the surface. Not only is there an open possibility

that the original specimens were annelids but also that the concept that developed of it as a mollusk might have been unjustified. Authors have taken Mörch's statements at face value without realizing that he was making judgments based only on his personal experience. Discussing *S. annulatus*, which he made the type species, he quoted Daudin's statement that it occurred on patellas and fissurellas of the Indian Ocean, and then said (1862a: 330-331): "The represented species is probably *Fissurella barbadensis* Gm." Later authors (e.g., MORRISON, 1968: 45) disregard the "probably" and identify the shell on which the supposed vermetid is shown as *F. barbadensis* Gmelin, 1791, a Caribbean species. One wonders whether they tried actually laying a Caribbean *Fissurella* alongside Daudin's figure. Either Daudin omitted the entire anterior half of the supporting fissurellid and showed only the part behind the orifice or else he drew the shell tilted but the entrenched specimen normally. In either case, he failed to show the radiating ribs accurately, and the proportions seem inconsistent. Had not Daudin cited "fissurelles," I would even suggest that the supporting shell might be one valve of a bivalve that had been perforated by a drill-shell. Although fissurellids are more common in the Caribbean, there are some species of that group in the Indo-Pacific area, and to my eyes a figure labelled "*Diodora jukesii* (Reeve)" from northwest Australia, in "Selected Shells of the World Illustrated in Colour," by SHIKAMA & HORIKOSHI, 1963: plt. 5, fig. 12, is a better match than any figure or shell of a Caribbean fissurellid that I have been able to find. I feel that Daudin's stated locality should be taken seriously unless there is compelling evidence to the contrary.

Mörch's characterization of the morphology of *Spiroglyphus annulatus* really is based on his observation of Caribbean material. He was aware of only one species of "*Spiroglyphus*" there, with a convex purple-black operculum, flat on its inner surface except for a central mamilla. Under *S. annulatus* he synonymized two Caribbean forms, *Vermetus irregularis* and *V. corrodens*, both of Orbigny, 1842 – described from Martinique, the type material now in the British Museum. Actually, there are in the Caribbean three species of entrenching vermetids, each with a distinctive operculum, only one of which is convex. The second Caribbean form has a flat operculum, and the third has one that is concave and horn-colored, with an orange spot on the central mamilla.

What the Indo-Pacific counterpart has for an operculum is an open question. I have seen material from Vietnam that, for shell features, matches Daudin's figure well. However, I have not yet detected a specimen with an intact operculum. There is a lot from the Riu Kiu Islands in the Stanford University collection that has a conic,

reddish operculum. The coiling resembles Daudin's figure, but the shells are sculptured spirally, not transversely. PRAESHAD & RAO in 1933 had an excellent description of *Vermetus (Spiroglyphus) andamanicus*, a vermetid that burrows in the surface of large *Trochus* in the Indian Ocean area. The operculum in this is somewhat but not markedly convex.

Mörch's discussion implied (although he did not actually state) that Daudin described and figured an operculum. What Mörch took to be a basic pattern for the genus was what he had observed in one Caribbean form. As MORTON (1965: 627) has shown, however, there are at least six fairly consistent opercular patterns in the entrenching vermetids. No worker, at present, is ready to split the group into this many subgroups, but establishing for each species which pattern the operculum takes is important for future reference. Before any further splitting is done, we need more work on local populations in areas of abundance to assure that groupings made on the basis of hard-part morphology (shell and operculum) are consonant with what can be observed as to the soft parts, growth habits, reproduction, etc.

Trying to be impartial on the matter of *Spiroglyphus*, both Dr. Michael Hadfield – specialist on Pacific Vermetidae – and I have been keeping watch for specimens that might qualify for designation as neotypes. We have not yet found one that meets all requirements. Nor have we found a satisfactory replacement specimen for *Stoa*.

An alternative to designating fresh material as replacement would be to designate the holotype of some already satisfactorily documented species as neotype of the cryptic taxon. Skillfully enough done, this might be a way of filling three of the open niches for opercular types. For *Stoa* it might be done by designating the lectotype of *Serpula maxima* Sowerby, 1825 (in the British Museum) as the neotype of one of De Serres' species, preferably *Stoa perforans*, which would then be given status, but only as a junior synonym. However, this would be to disregard basic habits of these mollusks – Sowerby's species is associated with corals or on reef rocks and does not attach to bivalves as *Stoa* does. The name would be salvaged at the expense of consistency. *Spiroglyphus* might be reinstated by designating as neotype the holotype of *Vermetus andamanicus* Prashad & Rao, 1933. This latter is extant and in good condition in the museum of the Zoological Survey of India, as reported recently by the curator, Dr. N. V. Subba Rao (letter dated July, 1979). However, the type specimens for this species are much smaller than what Daudin indicated and not on a fissurellid of any sort. I would feel reluctant to set aside a well-proposed name such as this in order to validate an equivocal earlier one. Thus, I would reject the option of

making arbitrary neotype selections. Rather, it seems preferable to jettison both *Spiroglyphus* and *Stoa*.

Declaring *Spiroglyphus* and *Stoa* as *genera dubia* would leave the field open for *Dendropoma*, the first name for entrenching vermetids that was based upon authentic type material. During the last two decades that name has been used in a substantial number of papers (at least 16 titles), not only by malacologists but also by earth scientists and others who are beginning to recognize how useful these mollusks are as markers of shoreline conditions. Living as they do attached to rocks and large shells in the upper intertidal zone, they provide good evidence for any changes in shoreline levels.

Therefore, in view of this practical incentive for nomenclatural stabilization and with the support of Dr. R. Tucker Abbott (personal communication), who on further study has changed his opinion about conserving *Spiroglyphus*, I am asking Dr. Michael Hadfield to join me in a petition to the International Commission on Zoological Nomenclature requesting that *Spiroglyphus* and *Stoa* be suppressed as generic names founded on unidentifiable species.

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